4C

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,899	10/31/2003	Niranjan Damera-Venkata	200207907-1	3010

22879 7590 05/17/2007
HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
KAU, STEVEN Y	
ART UNIT	**PAPER NUMBER**
2625	
MAIL DATE	**DELIVERY MODE**
05/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/698,899	DAMERA-VENKATA, NIRANJAN	
	Examiner	**Art Unit**	
	Steven Kau	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/31/2003*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on October 31, 2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

If you are rejecting an independent claim as 112 second, then the who claim tree is also rejected.

Specification

2. The specification is objected to by the examiner for the following reasons:

Paragraph 0023, recited: "FIG. 2a provides further detail of the encoding process 116 executed by encoder." "encoding process 116" should be "encoding process 114".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2, 3, 23 & 31 and 7, 16, 26, 34 & 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 2, recited "wherein the information is embedded at a ***coding rate*** that is linked to a graylevel of a contone patch, and wherein the bitmap is produced by halftoning the constant patch of the graylevel". The phrase "coding rate" renders the claim indefinite

because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Applicant failed to particularly point out the underlined words. In addition, there is insufficient basis for this limitation in the claim.

In view of applicant's disclosure, the claims will be interpreted as following:

"coding rate" can be the size of codeword, for that, the space is required for embedding the codeword, or "bit rate" required to insert/embed codeword into host image data, or compression ratio.

Claims 3, 23, & 31 are rejected for the same reasons discussed in the rejection of claim 2.

Regarding claim 7, recited "wherein the use of the bi-level bit map to select an image block is bypassed if the image block meets ***at least one requirement.***" The phase "at least one requirement" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Applicant failed to particularly point out the underlined words. In addition, there is insufficient basis for this limitation in the claim.

In view of applicant's disclosure, the claims will be interpreted as following:

"at least one requirement" can be maximum/minimum intensity threshold, base image used during the embedding process be known, or at least approximated, etc.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-11, 21-27, 29-34 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curry (US 5,710,636) in view of Sandford, II et al (Sandford) (US 5,778,102) and further in view of Lapstun (US 6,512,596).

With regard to claim 1, Curry discloses a method for generating halftone images, in that he teaches a method of processing a contone image {e.g. hardcopy documents, etc.} (col 1, lines 33-45), the method comprising: using a halftone screen to generate a bi-level bitmap {e.g. bitmap generator generates bitmap within halftone cells} (col 2, lines 56-65); partitioning the contone image into an array of image blocks {e.g. synthetic grayscale images, and two-dimensional array of halftone cells} (col 3, lines 62-67 & col 4, lines 1-5); halftoning the image blocks {e.g. halftoning the cells} (col 3, lines 46-61); using the bi-level bitmap to select some of the halftone image blocks {e.g. based on grayscale image data and bitmap codes} (col 3, lines 37-46).

Curry differs from claim 1, in that he does not teach modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image.

Sandford discloses a method for compression embedding, in that he teaches modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image {e.g. modifying binary

data/grayscale image/host data file using auxiliary data/key-pair} (Figure 1, col 7, lines 60-67, col 8, lines 1-3, col 10, lines 59-67 & col 11, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 2, Curry teaches that the bitmap is produced by halftoning the constant patch of the graylevel (col 3, lines 37-46).

Curry differs from claim 2, in that he does not teach the information is embedded at a coding rate that is linked to a graylevel of a contone patch.

Sandford teaches that the information is embedded at a coding rate that is linked to a graylevel of a contone patch {e.g. space needed for embedding auxiliary/key-pair data, or compression ratio} (col 8, lines 13-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include the information is embedded at a coding rate that is linked to a graylevel of a contone patch taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to clam 3, Curry differs from the claim, in that he does not teach the graylevel is determined by the coding rate.

Sandford teaches that the graylevel is determined by the coding rate (Figure 1, col 7, lines 60-67 & col 8, lines 1-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include the graylevel is determined by the coding rate taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 4, Curry teaches that the bitmap is selected from a predetermined table of bi-level bitmaps {e.g. a look-up memory} (col 3, lines 62-67 & col 4, lines 1-5).

With regard to claim 5, Curry teaches unselected image blocks are of one dimension and the modified image blocks are of a different dimension {e.g. halftone generator transforms spatially periodic grayscale input image (one dimension) into halftone dot patterns and these dot patterns are two-dimensional array} (col 3, lines 62-67 & col 4, lines 1-5).

With regard to claim 6, Curry teaches that a graphical bar code is embedded in the halftone image {e.g. graphical bar code – a human readable pattern} (Figure 5, col 3, lines 22-24).

With regard to claim 7, Curry teaches that the use of the bi-level bit map to select an image block is bypassed if the image block meets at least one requirement {e.g. bitmap is a black/white image (bi-level) and a grayscale image is the base image} (Figure 5, col 5, lines 20-27).

With regard to claim 8, Curry differs form claim 8, in that he does not teach error diffusion.

Lapstun discloses a halftoner/compositor, in that he teaches that the halftoning is error diffusion halftoning (col 18, lines 53-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include the halftoning is error diffusion halftoning taught by Lapstun because it gives better result (col 18, lines 55-57).

With regard to claim 9, Curry differs from claim 9, in that he does not teach that error caused by modifying the selected blocks is diffused.

Lapstun teaches that error caused by modifying the selected blocks is diffused {e.g. a dither volume provides great flexibility in dither cell} (col 37, lines 6-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include error caused by modifying the selected blocks is diffused taught by Lapstun because it gives better result (col 18, lines 55-57).

With regard to claim 10, Curry discloses an apparatus for producing halftone cells, but differs from claim 10, in that he does not teach modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image.

Sandford discloses a method for compression embedding, in that he teaches modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image {e.g. modifying binary data/grayscale image/host data file using auxiliary data/key-pair} (Figure 1, col 7, lines 60-67, col 8, lines 1-3, col 10, lines 59-67 & col 11, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 11, Curry discloses a processor for producing halftone cells, but differs from claim 11, in that he does not teach modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image.

Sandford discloses a method for compression embedding, in that he teaches modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image {e.g. modifying binary data/grayscale image/host data file using auxiliary data/key-pair} (Figure 1, col 7, lines 60-67, col 8, lines 1-3, col 10, lines 59-67 & col 11, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 21, Curry discloses a method for generating halftone images, in that he teaches an apparatus comprising one of an encoder {e.g. an apparatus for encoding} (col 2, lines 47-55) for encoding a contone image {e.g.

hardcopy documents, etc.} (col 1, lines 33-45) and a decoder for decoding a halftone image; the encoder using a halftone screen to generate a halftone bitmap {e.g. bitmap generator generates bitmap within halftone cells} (col 2, lines 56-65), partitioning the contone image into an array of image blocks {e.g. synthetic grayscale images, and two-dimensional array of halftone cells} (col 3, lines 62-67 & col 4, lines 1-5), halftoning the image blocks {e.g. halftoning the cells} (col 3, lines 46-61), using the halftone bitmap to select at least some of the image blocks {e.g. based on grayscale image data and bitmap codes} (col 3, lines 37-46).

Curry differs from claim 1, in that he does not teach a decoder, and modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in the halftone image; the decoder accessing a bi-level bit map; partitioning the halftone image into a plurality of second image blocks; using the bitmap to select at least some of the second blocks; identifying a code word sequence in the selected second blocks; and extracting the information from the code word sequence.

Sandford teaches modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in the halftone image {e.g. modifying binary data/grayscale image/host data file using auxiliary data/key-pair} (Figure 1, col 7, lines 60-67, col 8, lines 1-3, col 10, lines 59-67 & col 11, lines 1-3).

Lapstun teaches a decoder the decoder accessing a bi-level bit map (Figures 20 & 21, col 12, lines 62-67, col 13, lines 1-23 & col 35 lines 58-64); and partitioning the

halftone image into a plurality of second image blocks {e.g. dividing into 8x8 pixel blocks} (col 17, lines 58-67 & col 18, lines 1-3); using the bitmap to select at least some of the second blocks (Table 5, col 16, lines 39-59); identifying a code word sequence in the selected second blocks (Table 4, & Figure 9, col 14, lines 35-63); and extracting the information from the code word sequence {e.g. uses the bitstream decoder to extract the corresponding runlength from the bitstream} (col 30, lines 56-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include teaches modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in the halftone image taught by Sandford and a decoder the decoder accessing a bi-level bit map; and partitioning the halftone image into a plurality of second image blocks; using the bitmap to select at least some of the second blocks; identifying a code word sequence in the selected second blocks; and extracting the information from the code word sequence taught by Lapstun to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30, Sandford) and because it gives better result (col 18, lines 55-57, Lapstun).

With regard to claim 22, the structure elements of method claim 2 perform all steps of apparatus claim 22. Thus claim 22 is rejected under 103(a) for the same reason discussed in the rejection of claim 2.

With regard to claim 23, the structure elements of method claim 3 perform all steps of apparatus claim 23. Thus claim 23 is rejected under 103(a) for the same reason discussed in the rejection of claim 3.

With regard to claim 24, the structure elements of method claim 5 perform all steps of apparatus claim 24. Thus claim 24 is rejected under 103(a) for the same reason discussed in the rejection of claim 5.

With regard to claim 25, the structure elements of method claim 6 perform all steps of apparatus claim 25. Thus claim 25 is rejected under 103(a) for the same reason discussed in the rejection of claim 6.

With regard to claim 26, the structure elements of method claim 7 perform all steps of apparatus claim 26. Thus claim 26 is rejected under 103(a) for the same reason discussed in the rejection of claim 7.

With regard to claim 27, Curry differs from claim 27, in that he does not teach the apparatus includes a decoder that extracts the information at a rate that is linked to a graylevel of the halftone image.

Lapstun teaches that the apparatus includes a decoder that extracts the information at a rate that is linked to a graylevel of the halftone image {e.g. uses the bitstream decoder to extract the corresponding runlength from the bitstream} (col 30, lines 56-65).

With regard to claim 29, Curry teaches that an article for causing a processor to encode a contone image, the article comprising memory encoded with data for causing the processor to use a halftone screen to generate a bi-level bitmap {e.g. bitmap generator generates bitmap within halftone cells} (col 2, lines 56-65); partition the contone image into an array of image blocks; halftone the image blocks {e.g. synthetic grayscale images, and two-dimensional array of halftone cells} (col 3, lines 62-67 & col

4, lines 1-5); halftone the image blocks {e.g. halftoning the cells} (col 3, lines 46-61); use the bi-level bitmap to select some of the halftone image blocks {e.g. based on grayscale image data and bitmap codes} (col 3, lines 37-46).

Curry differs from claim 29, in that he does not teach to modify the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image.

Sandford discloses a method for compression embedding, in that he teaches modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image {e.g. modifying binary data/grayscale image/host data file using auxiliary data/key-pair} (Figure 1, col 7, lines 60-67, col 8, lines 1-3, col 10, lines 59-67 & col 11, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include modifying the selected halftone image blocks using code words, such that information contained in the code words is embedded in a halftone image taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 30, the structure elements of method claim 2 perform all steps of article claim 30. Thus claim 30 is rejected under 103(a) for the same reason discussed in the rejection of claim 2.

With regard to claim 31, the structure elements of method claim 3 perform all steps of article claim 31. Thus claim 31 is rejected under 103(a) for the same reason discussed in the rejection of claim 3.

With regard to claim 32, the structure elements of method claim 5 perform all steps of article claim 32. Thus claim 32 is rejected under 103(a) for the same reason discussed in the rejection of claim 5.

With regard to claim 33, the structure elements of method claim 6 perform all steps of article claim 33. Thus claim 33 is rejected under 103(a) for the same reason discussed in the rejection of claim 6.

With regard to claim 34, the structure elements of method claim 7 perform all steps of article claim 34. Thus claim 34 is rejected under 103(a) for the same reason discussed in the rejection of claim 7.

With regard to claim 35, Curry teaches partition the halftone image into a plurality of image blocks; use the bitmap to select at least some of the blocks {e.g. synthetic grayscale images, and two-dimensional array of halftone cells} (col 3, lines 62-67 & col 4, lines 1-5).

Curry differs from claim 35, in that he does not teach an article for causing a processor to extract information from a halftone image, the article comprising memory encoded with data for causing the processor to access a bi-level bit map; and identify a code word sequence in the selected blocks; and extract the information from the code word sequence.

Lapstun teaches an article {e.g. a main memory with programs} (col 29, lines 13-21) for causing a processor to extract information from a halftone image, the article comprising memory encoded with data for causing the processor to access a bi-level bit map (Figures 20 & 21, col 12, lines 62-67, col 13, lines 1-23 & col 35 lines 58-64; and

identify a code word sequence in the selected blocks; and extract the information from the code word sequence {e.g. uses the bitstream decoder to extract the corresponding runlength from the bitstream} (col 30, lines 56-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include an article for causing a processor to extract information from a halftone image, the article comprising memory encoded with data for causing the processor to access a bi-level bit map; and identify a code word sequence in the selected blocks; and extract the information from the code word sequence taught by Lapstun because it gives better result (col 18, lines 55-57).

With regard to claim 36, Curry differs from claim 36, in that he does not teach the information is extracted at a rate that is linked to a graylevel of the halftone image.

Lapstun teaches that the information is extracted at a rate that is linked to a graylevel of the halftone image {e.g. uses the bitstream decoder to extract the corresponding runlength from the bitstream} (col 30, lines 56-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include the information is extracted at a rate that is linked to a graylevel of the halftone image taught by Lapstun because it gives better result (col 18, lines 55-57).

With regard to claim 37, the structure elements of method claim 7 perform all steps of article claim 37. Thus claim 37 is rejected under 103(a) for the same reason discussed in the rejection of claim 7.

With regard to claim 38, Curry differs from claim 38, in that he does not teach extracting the information from the code word sequence includes using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select the most likely sequence of image blocks corresponding to the information image block sequence originally encoded into the image, and converting the most likely sequence of image blocks into the information.

Lapstun teaches extracting the information from the code word sequence includes using probabilistic analysis {e.g. edge calculation logic, external logic, etc.} (col 30, lines 66-67) to produce a set of probability parameters {e.g. runlength}, using the set of probability parameters to select the most likely sequence of image blocks corresponding to the information image block sequence originally encoded into the image (col 35, lines 48-52), and converting the most likely sequence of image blocks into the information (col 35, lines 39-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include extracting the information from the code word sequence includes using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select the most likely sequence of image blocks corresponding to the information image block sequence originally encoded into the image, and converting the most likely sequence of image blocks into the information taught by Lapstun because it gives better result (col 18, lines 55-57).

7. Claims 12-20 & 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chol et al (Chol) (US 2004/0071311) in view of Curry (US 5,710,636) and further in view of Sandford, II et al (Sandford) (US 5,778,102)

With regard to claim 12, Chol discloses a network camera server and digital video recorder, in that he teaches a method of extracting information embedded in a halftone image, the method comprising: accessing a bi-level bit map partitioning the halftone image into a plurality of image blocks {e.g. separated into N blocks, and a bit stream is embedded into the value luminance of each image block, etc.} (Par. 0057); identifying a code word sequence in the selected blocks {e.g. inputting signals to one data sequence and simultaneously performs function of embedding the watermark information, etc.} (Par. 0149) and extracting the information from the code word sequence {e.g. watermark signal is embedded and extracted in the form of a certain pattern, etc.} (Par. 0053).

Chol differs from claim 12, in that he does not explicitly teach that extracting information embedded in a halftone image.

Yu discloses a digital watermarking on binary document, in that he teaches that extracting information embedded in a halftone image (Figure 7, Abstract & Par. 0032).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Chol to include extracting information embedded in a halftone image taught by Yu because it allows data to be embedded into the graph (Par. 0028).

With regard to claim 13, Chol teaches that the information is extracted at a rate that is linked to a graylevel of the halftone image {e.g. a watermark extracted from the digital image from said image signal dividing portion (size), etc.} (Par. 0026).

With regard to claim 14, Chol differs from claim 13, in that he does not teach the bitmap is accessed from a table of different bitmaps.

Sandford teaches the bitmap is accessed from a table of different bitmaps {e.g. a look-up-table, and key-pair table, etc.} (col 5, lines 19-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Chol to include the bitmap is accessed from a table of different bitmaps taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 15, Chol differs from claim 15, in that he does not teach accessing the bitmap includes using a gray level parameter as an index into the table.

Sandford teaches that accessing the bitmap includes using a gray level parameter as an index into the table (col 5, lines 19-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Chol to include accessing the bitmap includes using a gray level parameter as an index into the table taught by Sandford to improve security and maintain same bandwidth for data transmission (col 4, lines 5-30).

With regard to claim 16, Chol teaches that an image block meeting certain requirements is automatically discarded prior to the selection (Par. 0147).

With regard to claim 17, Chol teaches that using unselected blocks to reconstruct the image {e.g. it is obviously that unselected blocks remains for image reconstruction – without being damaged even after passing by a very minute modification of an image} (Par. 0062).

With regard to claim 18, Chol teaches that extracting the information includes using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select the most likely sequence of image blocks corresponding to the information image block sequence originally encoded into the image, and converting the most likely sequence of image blocks into the information {e.g. watermark embedding can be determined according to an operator's selection use or level of image security} (Par. 0073).

With regard to claim 19, Chol discloses an apparatus performing extracting information.

Chol differs from claim 12, in that he does not explicitly teach that extracting information embedded in a halftone image.

Yu discloses a digital watermarking on binary document, in that he teaches that extracting information embedded in a halftone image (Figure 7, Abstract & Par. 0032).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Chol to include extracting information embedded in a halftone image taught by Yu because it allows data to be embedded into the graph (Par. 0028).

With regard to claim 20, Chol differs from claim 20, in that he does not teach that an article comprising memory encoded with a data for causing a processor to perform the method of claim 12.

Yu teaches an article comprising memory encoded with a data for causing a processor to perform the method of claim 12 (Par. 0028).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Chol to include an article comprising memory encoded with a data for causing a processor to perform the method of claim 12 taught by Yu because it allows data to be embedded into the graph (Par. 0028).

With regard to claim 28, Chol differs from claim 28, in that he does not teach the apparatus includes a decoder; and wherein extracting the information includes using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select the most likely sequence of image blocks corresponding to the information image block sequence originally encoded into the image, and converting the most likely sequence of image blocks into the information.

Sandford teaches that the apparatus includes a decoder (Figures 5, col 8, lines 48-62); and wherein extracting the information includes using probabilistic analysis to produce a set of probability parameters {e.g. the histogram analysis leads naturally to a schedule of indices} (col 3, lines 56-60), using the set of probability parameters to select the most likely sequence of image blocks corresponding to the information image block sequence originally encoded into the image (col 8, lines 4-12), and converting the most

likely sequence of image blocks into the information {e.g. construct the auxiliary data from the quantize indices} (col 13, lines 56-67 & col 14, lines 1-6).

Correspondence Information

8. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is (571) 270-1120. The examiner can normally be reached on Monday to Friday, from 8:30 AM – 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Lamb can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Kau
Patent Examiner
Division: 2625
May 14, 2007

TWYLER LAMB
SUPERVISORY PATENT EXAMINER